

Response
Serial No. 09/926,764
Attorney Docket No. 011474

AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of claims:

Claims 1-5 (Canceled).

Claim 6 (Currently Amended): An organic-inorganic composite magnetic material comprising a metal particle obtained by applying ligands of thiol-substituted organic radicals each having an unpaired electron to ligands to be formed by chemisorbing thiol on said metal particle so as to ferromagnetically orient each spin of said unpaired electrons of said organic radicals,

wherein each of said unpaired electrons of said thiol-substituted organic radicals is chemisorbed on said metal particle through a π -conjugation so as to provide a magnetic interaction to said metal particle.

Claim 7 (Canceled).

Claim 8 (New): The organic-inorganic composite magnetic material as defined in claim 6, wherein said metal is made of gold.

Claim 9 (New): An organic-inorganic composite magnetic thin film comprising a metal particle obtained by applying ligands of thiol-substituted organic radicals each having an unpaired electron to ligands to be formed by chemisorbing thiol on said metal particle so as to ferromagnetically orient each spin of said unpaired electrons of said organic radicals,

wherein each of said unpaired electrons of said thiol-substituted organic radicals is chemisorbed on said metal particle through a π -conjugation so as to provide a magnetic interaction to said metal particle.

Claim 10 (New): A method of making an organic-inorganic composite magnetic material as defined in claim 6, said method comprising:

reducing a salt including a metal ion with a reducing agent in the presence of a chemically stabilizing ligand so as to form a soluble metal particle, said metal allowing thiol to be absorbed thereon, and

substituting said stabilizing ligand absorbed on said formed soluble metal particle with a thiol-substituted organic radical having an unpaired electron so as to synthesize an organic-radical chemisorbed metal particle,

wherein said organic radicals are one or more of the group consisting of phenyl nitronyl nitroxide having a thiol group in its meta position, phenyl nitroxide having a thiol group in its meta position, a constituent derived from disulfide and a constituent derived from thiocarboxylic acid.

Claim 11 (New): The method of making an organic-inorganic composite magnetic material according to claim 10,

wherein said stabilizing ligand is one or more of the group consisting of: alkanethiol, aromatic thiol, quaternary ammonium salt, quaternary phosphonium salt and polymers having a metal ligand as a side chain.

Claim 12 (New): The method of making an organic-inorganic composite magnetic material as defined in claim 8, wherein said step for synthesizing an organic-radical chemisorbed gold particle includes the step of reducing hydrogen tetrachloroaurate with a reducing agent in the presence of a thiol-substituted organic radical having an alkyl group or any derivatives thereof to directly synthesize the organic-radical chemisorbed gold particle.

Claim 13 (New): The method of making an organic-inorganic composite magnetic material as defined in claim 10, further comprising:

dissolving said metal particles having thiol-substituted organic radicals thereon in an organic solvent and a bridging ligand to form a solution; and

coating said solution onto a substrate to form an organic-inorganic thin film.